Weight-Based Rates: Collecting Waste Canadian Style

By Don McLellan

In Canada, the community of Oak Bay, British Columbia, is giving weight-based rates a try. While the pilot program has already taken off, evaluation of costs and feasibility still remains.

In a two-phase pilot program, Oak Bay, British Columbia, is testing collection programs for refuse and recyclables.

Can collection methods affect the amount of waste households generate?

The Capital Regional District (CRD) of Victoria, British Columbia, is willing to find out. CRD, which represents 50 municipalities in the Vancouver area, has begun a pilot collection program in Oak Bay, British Columbia, to further their investigation of a user-pay garbage collection system.

Three years ago a public controversy erupted when a natural lake adjacent to the regional landfill was drained. The CRD, in a tradeoff, vowed to speed up a provincial government mandate requiring municipalities to meet a 50 percent reduction in the amount of waste going to the Hartland Landfill.

The province wanted the job done by the year 2000; the CRD, in turn, produced a legal document that pledged to meet the provincial diversion target by 1995.

The CRD began to investigate a user-pay garbage collection system, which would allow municipalities to remove collection costs from property taxes. CRD also wanted to find a way to coordinate all the municipalities under one integrated waste system.

Several factors prompted the CRD to select Oak Bay, a bedroom suburb to the provincial capital of Victoria, for the pilot weight-based program.

Oak Bay, it turned out, was an ideal community to launch the pilot. The suburb of 18,000 residents, 30 percent of whom are over 65 years old, is different than the other municipalities under the CRD umbrella.

Houses in Oak Bay are among the highest priced in the region and many of its residents are well-educated professionals. After evaluating its demographics, CRD officials decided that if the pilot couldn't succeed in stable Oak Bay, then it probably couldn't succeed in any other municipality.

Some CRD officials classify Oak Bay as a community with "green stripes." Curbside leaf collection, annual curbside collection programs for garden waste and an active municipal compost yard program help keep Oak Bay's heavily treed streets clean.

The community also has been recognized for having the highest participation rate in the CRD's blue box recycling system and for leading the region in waste reduction. Prior to the pilot project, landfill diversion targets were already exceeded.

Oak Bay's downside is its terrain. Many properties in the hilly community have rocky outcroppings. As a result, some residents must climb a

steep set of stairs to bring their trash to the curb for collection. With a large portion of senior citizen residents, and considering those residents with disabilities, this is an ongoing concern for Oak Bay officials.

Introducing The Program

To the CRD's advantage, the issue of garbage removal and its financial and environmental implications have been in the news on Vancouver Island for years. As a result, most residents in the pilot program were already aware of the basic issues involving refuse collection.

CRD mailed out informational flyers about the pilot program to all Oak Bay households and followed up with a six-week telephone campaign. A telemarketing group telephoned each household to see if they received the informational flyer and if their household would participate in the pilot program including curbside garbage collection. If the household agreed to the program, the caller made arrangements to provide the household with more detailed information about the program. The callers had to determine the most effective way to get the information to the participating households. Options included: putting a notice in the *Oak Bay Star* newspaper; sending the information through the mail; delivering a flyer to the household; or phoning with an automated voice message.

Oak Bay Mayor Diana Butler is chairperson of the CRD Environmental Committee. She is also an enthusiastic participant in the pilot program. "I felt that if we were going to move to a weight-based system then I'd better know what it was all about," she said.

Behind The Scenes

The kilogram-based pilot served as the second phase of a community program in which the cost of garbage removal was deducted from general tax revenue and the allowable number of cans or bags permitted per collection was restricted. A co-collection system to remove recyclables and waste in the same vehicle was also part of the first phase.

During the pilot period, residents voluntarily carry all recyclables, compostables and waste to the curb for pick-up by a three-person municipal crew.

Next, the carts manufactured by SSI Schaefer Systems International Inc., Charlotte, N.C., are automatically weighed by load cells that are built into the semi-automated lifters installed on a Tri-pack co-collection vehicle manufactured by G&H Manufacturing Inc., Mansfield, Texas.

The load-cells are hard-wired to the computer and the weight information is monitored by an outboard computer to an identification code generated by a radio-frequency identity device (RFID) tag permanently imbedded in each container.

An antenna built into the semi-automated lifter mechanism emits a radio signal strong enough to excite the RFID, which in turn responds by sending out a unique identification signal. The antenna picks up the signal and relays it to the onboard computer, matching this identifier to its customer database and assigning the corresponding weight of the container contents.

The load-cell weighs the container numerous times on both the full "up" cycle and the empty "down" cycle. The computer takes an average of the readings from the "up" cycle and subtracts an average of the readings from the "down" cycle to generate a weight for the contents of the container.

The on-board computer on the Tri-pack relays the weight of the container and its contents, the type of material and the generator's name and address via radio links to the host computer.

Employing spread-spectrum mo-

dems mounted on the trucks and in the yard, information collected during the day on each truck is added to the residential waste database, which provides participating communities with waste stream analyses and data for billing systems.

The Analysis

"We had to adjust our schedules," said Mayor Butler about her family of four. "We set up new collection points in our house and suddenly we were able to recycle more from the home."

A total of 2,200, or 70 percent, of South Oak Bay's 3,200 single-family residences volunteered to participate in the project, which began in October 1993 and will continue until June 1994.

"We didn't have any problems with the system at all," said Andy Schiiler, CRD's senior planner for solid waste. "It's working exactly as they said it would."

The CRD covered the costs of the program, including purchasing a truck and leasing thousands of customized carts.

"The money we saved from people volunteering to drop their trash off at the curb paid for the collection of recyclables," Schiiler said. And according to Schiiler, the haulers had no problems with the pilot program.

Mock invoices will inform mini-pilot participants of the weight of trash discarded, but hard numbers will not be available until tracking surveys compare the findings with control groups not participating in the carry-to-the-curb project.

The mayor is in the group targeted to receive a mock invoice.

"It's going to be quite startling to find out how much we throw away," Butler said. "I'm sure it's increasing public awareness and making us look at what things are made of when we go shopping."

Like all observants of the pilot program, Butler is waiting for the final report before drawing any conclusions. "When we get all the information in, the big question will be what form our collection system will take," she said. "The costs aren't clear yet."

Implementing a program like this can save money but there are also major equipment costs for municipalities, Butler said. "Also, the majority of our municipalities are more rural than [Oak Bay] and use private haulers."

Costs, for example, would include the wheeled carts that residents use to take the garbage to the curb. These carts cost $40 each and every household has three of them. "This could represent a burden for some people, and we have to look at that," Butler said. The weigh-in-motion technology supplied by Mobile Computing Corp., Toronto, is currently accurate to one kilogram in 500. A slightly higher accuracy will be required for the system to receive Weights and Measures certification in Canada and the United States.

If the company fails in its bid to win certification this summer, Schiiler said a temporary substitute collection system would be introduced until weight-based technology becomes approved. ■

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